

City of San Diego
Feasibility Study for a Community Choice Aggregate
July 2017 Final Draft
Willdan Financial Services

Benefits (beginning page 75 of report):

1. Greenhouse Gas Reductions
2. Economic Impacts
 - a. Lower Energy Bills for Consumers
 - b. Development of Local Renewables
 - c. Environmental and Health Benefits

Risks (beginning page 101 of report):

1. Power Procurement Risks
2. Changing Regulatory Landscape Risk
3. PCIA-scale of San Diego program (50% of SDG&E) is larger than other CCA's in state. Scale of stranded assets and impact to SDG&E cannot be estimated.
4. Credit Risk-bond may be difficult to achieve since there is no recognized credit rating for the CCA.
5. Opt-Out Risk
6. Renewable Generation Risk

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Recommendations (page 124 of report):

1. Given the nature of PCIA and its risk to the CCA:
 - a. Prioritize the issue.
 - b. Create a strategic plan for addressing this risk.
 - c. Mobilize internal resources to monitor and support the strategic plan.
 - d. Engage with CPUC, SDG&E and other stakeholders to inform strategic plan and move it forward.
2. Join CalCCA, an association of CCA's in the state, formed to represent CCA's in the legislature and relevant regulatory agencies (CPUC, CEC, California Air Resources Board).
3. Engage appropriate industry professionals to vet pro forma assumptions and results...ie, registered Financial Advisor, a power supply risk management expert, renewable energy generators, developers and others.
4. Explore economic development opportunities further to fully leverage potential for local job creation and business investment.

CONCLUSIONS & RECOMMENDATIONS

Table 35: Sustainable Energy Advisory Board CCA Recommended Minimum Performance Results

CATEGORY	1-3 YEARS	3-5 YEARS	5-10 YEARS	10+ YEARS	RESULT
ENVIRONMENTAL					
GHG Reductions		Meet Climate Action Plan thresholds		Meet Climate Action Plan thresholds	Feasible to Meet Criteria
Renewables Percentage	Minimize Non-Local Renewable Energy Certificates	Minimize Non-Local Renewable Energy Certificates	Minimize Non-Local Renewable Energy Certificates, On-track to have no RECs by 2035	100% Renewable Energy by 2035 not from Renewable Energy Certificates	Feasible to Meet Criteria
Local DG				50% of energy from local Distributed Generation by 2035	Feasibility Not Addressed within this Study (outside of Study Scope)
Energy Efficiency / Demand Response Deployment			Establish program(s) to meet Climate Action Plan targets and the CA Long Term Energy Efficiency Strategic Plan		Feasibility Not Addressed within this Study (outside of Study Scope)
FINANCIAL					
Operating Reserve	Sufficient to establish operations	Enough capital to invest in local projects/ programs			Feasible to Meet Criteria
Cost of Purchased Energy (Power Charge Indifference Adjustment and Electricity)	Not substantially different than SDG&E	Not substantially different than SDG&E	Not substantially different than SDG&E	Not substantially different than SDG&E	Feasible to Meet Criteria
ECONOMIC					
Impact on Markets and Jobs (Labor, Home Builders, Solar - Big & Small, Energy Storage)	No negative effect on local jobs	Positive impact on local jobs	Substantial positive impact local jobs by 2035	Substantial positive impact local jobs by 2035	Feasible to Meet Criteria
Rates to Consumer (Social Cost)	Baseline offering not more than SDG&E	Baseline offering not more than SDG&E	Program should show high likelihood of reduced rates for baseline offering	Program should show high likelihood of reduced rates for baseline offering	Feasible to Meet Criteria
Results Key: ■ Feasible to Meet Criteria ■ Feasibility Not Addressed within this Study (outside of Study Scope) ■ Not Feasible to Meet Criteria					

Table 22: Debt Issuance and Annual Debt Service

Initial Funding Requirements	
Operating Expenses	\$271,527,480
Contingency, Rate Stabilization Fund	68,715,891
Total CCA Funding	\$340,243,371
Bond Reserve Fund	\$24,601,610
Capitalized Interest	32,795,054
Issuance Costs	\$12,298,145
<i>Other Bond Proceeds</i>	\$69,694,810
Total Bond Issuance	\$409,938,180
Debt Service Payments	
Year 1 Interest Payment (Dec. 31, 2020)	\$16,397,527
Year 2 Interest Payment (Dec. 31, 2021)	\$16,397,527
Year 3 through Year 30 Annual Principal Plus Interest Payments	\$24,601,610

RATE STABILIZATION AND CONTINGENCY FUND

A fundamental tenet of rate design should be rate stability. Rates should be stable from a revenue perspective:

- Revenues should not change frequently and/or extremely;
- Utilities should have a stable income;
- Rates should be stable from the customer’s perspective; and
- Customers should be able to anticipate and plan for their monthly bills.

To mitigate risks associated with higher than expected operating costs, lower than expected participation and revenues, or other deviations from expected circumstances, the COS analysis assumes that the CCA program will set up a rate stabilization and contingency fund. This fund would be used to cover the unexpected costs associated with shorter-term emergent issues, such as an extreme spike in power procurement costs, or to ease the burden on ratepayers resulting from longer-term issues. For example, if a large, long-term rate increase is somehow required, the fund would enable a more gradual increase of rates over time. The rate stabilization and contingency fund was assumed to include adequate cash resources to cover a 10% increase above expected annual non-power operating costs (10% times the total operating costs less power procurement costs) plus an 11% increase in expected power procurement prices. For the Test Year, this funding expense equated to \$73 million. Rate stabilization and contingency fund forecasts for the other scenarios and sensitivity cases can be found in Exhibit I.

RESULTS

CCA program consistently generates surplus working capital. As shown in Table 25, the NPV of CCA surplus working capital as of year 2035 totals \$55 Million (in 2020 dollars). Such operating proceeds could be used to fund CCA initiatives such as low income programs, solar deployment, and other actions to support CAP. Hence, demonstrating potential attainment of certain CAP goals.

Table 25: Base Case Key Operating Results

Base Case - 50% RPC 2% Opt Up to 100%									
Year	Operating Revenues (\$000s)	Total Operating Expenses Plus Contingency/ Rate Stabilization Fund (\$000s)	Non-Operating Revenues/ (Expenses) (\$000s)	Debt Service (\$000s)	Net Margin [*] (\$000s)	Working Capital Fund (\$000s)	Working Capital Target (\$000s)	Working Capital Surplus/ (Deficiency) (\$000s)	Working Capital Surplus/ (Deficiency) (%)
	a	b	c	d	a - b + c - d	e	f	e - f	(e/f)-1
2020	216,129	282,080	1,732	16,398	(80,617)	276,024	99,171	176,853	178%
2021	649,403	678,467	2,943	16,398	(42,518)	249,903	241,606	8,297	3%
2022	771,169	762,297	2,666	24,602	(13,063)	236,840	273,184	(36,345)	-13%
2023	786,012	771,397	2,564	24,602	(7,421)	229,418	276,955	(47,536)	-17%
2024	786,436	769,030	2,414	24,602	(4,783)	224,636	277,071	(52,436)	-19%
2025	783,239	762,648	2,472	24,602	(1,539)	223,097	274,646	(51,550)	-19%
2026	782,201	750,452	2,513	24,602	9,660	232,757	270,736	(37,979)	-14%
2027	781,618	749,480	2,587	24,602	10,123	242,880	270,506	(27,626)	-10%
2028	782,573	752,507	2,593	24,602	8,057	250,938	271,848	(20,911)	-8%
2029	780,572	750,068	2,785	24,602	8,687	259,625	271,341	(11,716)	-4%
2030	780,173	748,559	2,632	24,602	9,645	269,270	271,157	(1,887)	-1%
2031	779,980	739,300	3,019	24,602	19,098	288,368	268,527	19,841	7%
2032	782,130	741,406	3,108	24,602	19,231	307,598	269,512	38,086	14%
2033	781,871	744,897	3,384	24,602	15,756	323,355	270,763	52,592	19%
2034	782,349	737,178	3,553	24,602	24,123	347,477	268,649	78,828	29%
2035	782,715	737,452	3,824	24,602	24,486	371,963	269,020	102,943	38%

NPV of Net Margin: (48,354)

NPV of Surplus Funds for Investment in CCA Programs (Cumulative as of 2035): \$54,962

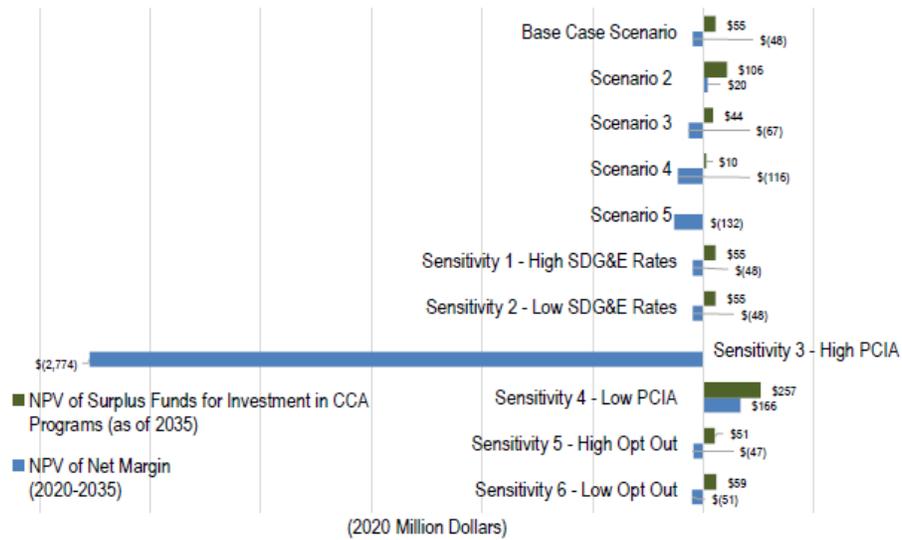
[*] Net Margin includes Net Operating Income less Debt Service. The net present value (NPV) of the Net Margin is determined using a 4% discount rate and is as of Year 2020. The discount rate is equal to the interest rate on the long-term debt.

SENSITIVITY ANALYSES RESULTS

Figure 40 graphically depicts the difference in energy commodity rates between the CCA program and SDG&E for the Base Case and the sensitivity cases around it. The Figure shows at the top CCA and SDG&E Base Case average rates for "baseload" customers, with average residential class usage above the 130% baseline allowance.⁹⁰ Below the Base Case rates, the Figure depicts the average baseload customer rates for the CCA program and SDG&E for the six sensitivity cases.

⁹⁰ Ibid.

Figure 42: CCA Operating Results by Scenario and Sensitivity Analysis



Base Case Scenario: 50% Renewable Portfolio Content for 98% of customers and 100% RPC for 2%
 Scenario 2: 50% Renewable Portfolio Content for all customers
 Scenario 3: 80% Renewable Portfolio Content for all customers
 Scenario 4: 100% Renewable Portfolio Content for all customers
 Scenario 5: 80% Renewable Portfolio Content for 98% of customers and 100% RPC for 2%
 PCIA: Power Charge Indifference Adjustment

RESULTS

As can be seen in Table 23, in 2022 on average the CCA program rates for baseload customers are slightly higher than SDG&E (by 1.72%), but by 2026 on average rates are significantly lower, or 10.85% less than SDG&E. CCA rates for the remainder of the Study period remain below those projected for SDG&E, indicating that from a benefit-cost perspective, the CCA program under the Base Case is financially feasible.

Table 23: Base Case Scenario Rate Comparison by Customer Class CCA v. SDG&E (\$/kWh)⁸⁸

Indicative Comparison 50% Renewable Portfolio Content (Average Monthly Load Above 130% SDG&E Baseline [*])										
Rate Class	2022		2023		2024		2025		2026	
	CCA Rates	SDG&E Rates								
Agriculture	0.1204	0.1167	0.1204	0.1177	0.1204	0.1188	0.1204	0.1199	0.1204	0.1210
Commercial/Industrial Small <20kW	0.1320	0.1313	0.1320	0.1343	0.1320	0.1374	0.1320	0.1405	0.1320	0.1438
Commercial/Industrial Large >20kW	0.1339	0.1262	0.1339	0.1299	0.1339	0.1338	0.1339	0.1378	0.1339	0.1419
Residential	0.1516	0.1519	0.1516	0.1593	0.1516	0.1670	0.1516	0.1752	0.1516	0.1837
Residential CARE	0.1461	0.1464	0.1461	0.1536	0.1461	0.1610	0.1461	0.1688	0.1461	0.1770
Average	0.1368	0.1345	0.1368	0.1390	0.1368	0.1436	0.1368	0.1484	0.1368	0.1535
CCA Rate Premium/(Savings)		1.72%		-1.55%		-4.73%		-7.83%		-10.85%

[*] Refer to Special Condition 3, Sheet 5: http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_DR.pdf for a definition of SDG&E Baseline load levels and associated rates.

The COS analysis also evaluated the CCA program opt-up rates compared to SDG&E’s EcoChoice rate projections. Under the Base Case, the 2% of customers opting up to the 100% RPC have rates higher than SDG&E’s EcoChoice, as is shown in Table 24.

⁸⁸ Reflects SDG&E rates for 130% above baseline. Refer to Load allowance used in rate tariffs for San Diego Gas and Electric; refer to Special Condition 3, Sheet 5: http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_DR.pdf

Table 24: Base Case Scenario Rate Comparison by Customer Class CCA v. SDG&E EcoChoice (\$/kWh)⁸⁹

Indicative Comparison 100% Renewable Portfolio Content (Average Monthly Load Above 130% SDG&E Baseline [*])										
Rate Class	2022		2023		2024		2025		2026	
	CCA Rates	SDG&E Rates								
Agriculture	0.1504	0.1315	0.1504	0.1327	0.1504	0.1339	0.1504	0.1351	0.1504	0.1363
Commercial/Industrial Small <20kW	0.1620	0.1383	0.1620	0.1415	0.1620	0.1448	0.1620	0.1481	0.1620	0.1515
Commercial/Industrial Large >20kW	0.1639	0.1190	0.1639	0.1225	0.1639	0.1262	0.1639	0.1300	0.1639	0.1338
Residential	0.1816	0.1326	0.1816	0.1391	0.1816	0.1458	0.1816	0.1529	0.1816	0.1603
Residential CARE	0.1761	0.1271	0.1761	0.1333	0.1761	0.1398	0.1761	0.1466	0.1761	0.1537
Average	0.1668	0.1297	0.1668	0.1338	0.1668	0.1381	0.1668	0.1425	0.1668	0.1471
CCA Rate Premium/(Savings)		28.60%		24.65%		20.80%		17.04%		13.38%

[*] Refer to Special Condition 3, Sheet 5: http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_DR.pdf for a definition of SDG&E Baseline load levels and associated rates.

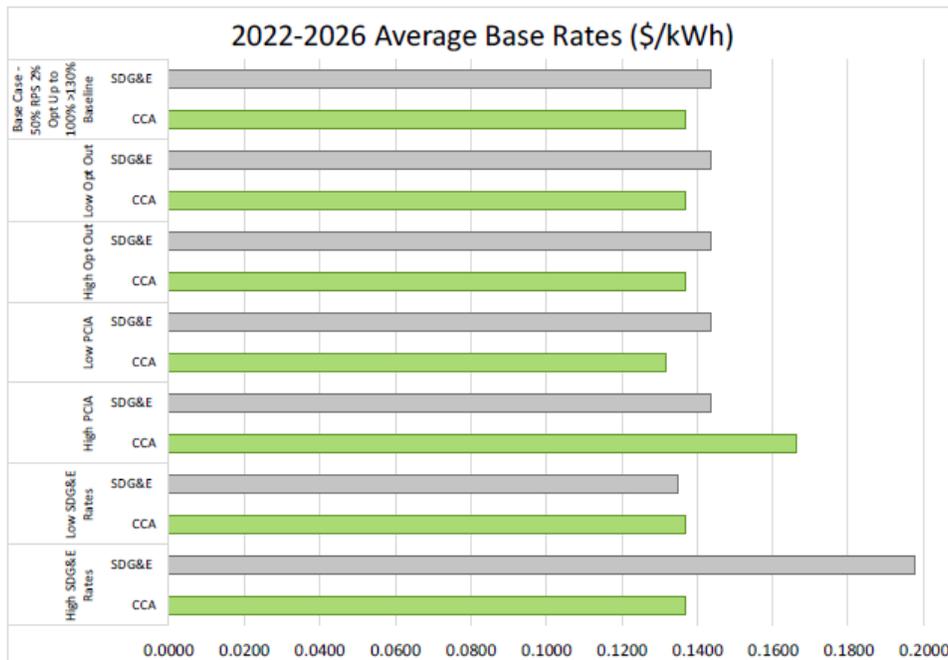
Looking at the financial operating performance of the CCA program under the Base Case, during the first six years of operation, operating and non-operating revenues are not sufficient to cover operating expenses (including the contingency and rate stabilization fund) plus debt service. These key operating results are shown in Table 25 and are encapsulated in the negative net margin numbers from CCA onset through year 2025. These negative net margins are owed to the large up front investments required to establish the CCA program and the lag in customer participation and associated revenues. However, net margins are shown to steadily increase year over year, becoming positive in year 2026 and growing steadily throughout the remainder of the Study period. Also, the working capital—a measure of the CCA program’s ability to meet its obligations with current assets—can be deemed adequate from onset of the CCA program throughout the Study period. Working capital available deviates from the working capital target, but only by less than 10% for five years. Given the conservative target for working capital set within the COS analysis and the available amount of cash on hand (which always exceeds \$220 million), the CCA program under this Base Case Scenario is reliably solvent and financially feasible.

The first years of net margins are sufficiently negative to cause the NPV of the net margins over the entire Study period to also be negative. The NPV is calculated using a discount rate of 4% (set equal to the interest rate for the long-term debt) and shows that as of 2020, the NPV of all the net margins earned (2020 through 2035) is -\$48.3 million.

If looking at the CCA program from a traditional investment perspective, the negative NPV of net margins would indicate the CCA program under the Base Case does not make financial sense. However, the Study includes consideration of additional factors when assessing CCA feasibility. After 2026, the

⁸⁹ Ibid.

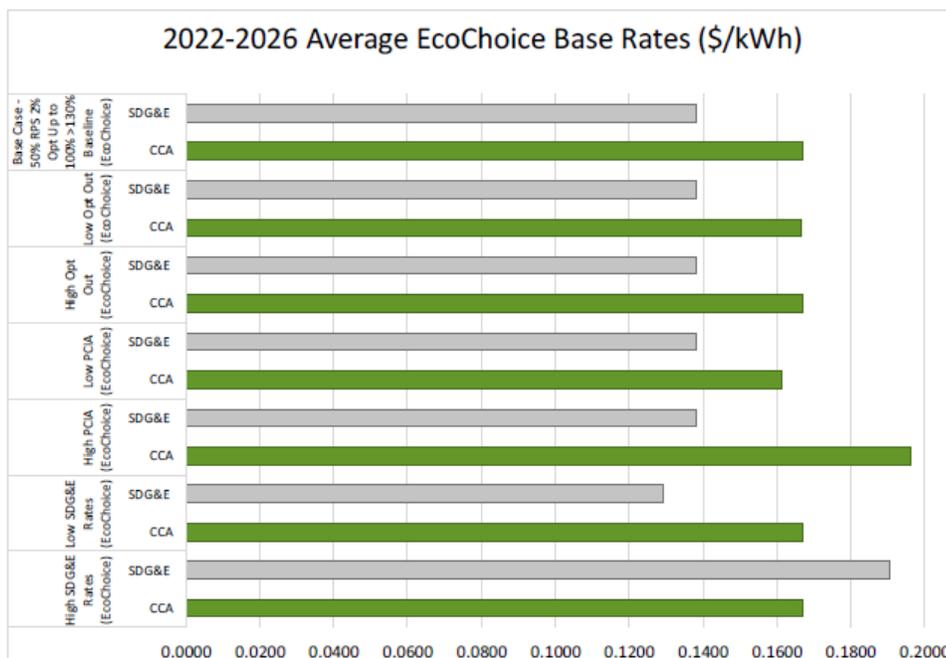
Figure 40: Rate Comparison Summary for Base Case Scenario and All Sensitivities (50% RPC)



As with the previous Figure 40, Figure 41 shows CCA and SDG&E Base Case average energy commodity rates compared with the six sensitivity cases, but this time depicting rates for those CCA customers opting up to 100% renewables versus SDG&E's projected EcoChoice rates. As discussed previously, the CCA program opt up rate is higher than the SDG&E EcoChoice rate under the Base Case and six sensitivity analyses.

Detailed results for other scenarios appear in Exhibit I.

Figure 41: Rate Comparison Summary for Base Case Scenario and All Sensitivities (100% RPC)



SUMMARY OF FINANCIAL ANALYSES

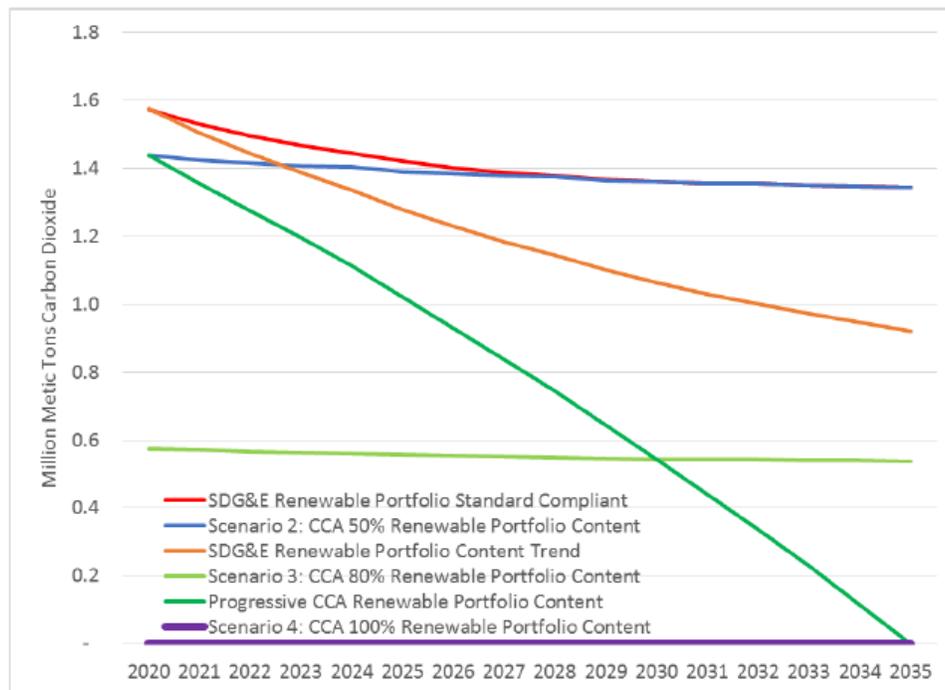
Concluding the discussion of Study Results, Figure 42 provides a summary overview of operating results by scenario and sensitivity analysis. This Figure depicts the NPV, using a 4% discount rate, of the annual net margins over the Study period as well as the NPV of surplus funds that are forecasted to be available for investment beginning in year 2027, for all the scenarios and sensitivity analyses.

The net margins represent net operating income less debt service. The low, and sometimes negative, NPVs of net margins are owed to the large up front investments required to establish the CCA program and the lag in customer participation and associated revenues. However, annual net margins in all cases, except Sensitivity Analysis 3 - High PCIA, are shown to steadily increase year over year, becoming positive around year 2026 and remaining positive, on average, throughout the remainder of the Study period.

For most of the scenarios and sensitivity analyses examined, the first years of net margins are sufficiently negative to cause the NPV of the net margins over the entire Study period to also be negative. If looking at the CCA program from a traditional investment perspective, the negative NPV of net margins would indicate the CCA program under the Base Case does not make financial sense. However, the Study includes consideration of entirely different factors when assessing CCA feasibility, including the achievement of stated program goals and overall financial feasibility and solvency.

In the following Figure 45, the emissions reductions are depicted for the different SDG&E and CCA RPC scenarios.

Figure 45: Projected Carbon Dioxide Emissions by CCA Scenario and SDG&E Forecast



ECONOMIC IMPACTS

Establishing a CCA program is expected to result in three levels of economic impact. The first or primary level includes two economic impacts: lower energy bills for customers; and development of local renewable resources to support increased levels of CCA program supply portfolios. The second level of economic impacts includes those resulting from customer-incentive programs created by the CCA program. The third level of economic impacts includes environmental and health impacts related to air quality or improved human health due to the increased use of renewable energy sources.

This section provides: the rationale for quantifying each of these economic impacts, including key assumptions and underlying methodology; and a summary of the results in terms of retail and construction spending, jobs, labor income, output and total value-added activity within the San Diego

Table 27: Comparison of Potential Carbon Dioxide Output—SDG&E v. CCA Program (MMT Carbon Dioxide)

Year	SDG&E RPS Compliant Content Estimate		SDG&E RPS Trend [*]		CCA 50% RPC	CCA 80% RPC	CCA 100% RPC	Progressive CCA RPC		
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
2020	45.2%	1.6	45.3%	1.6	1.4	0.6	-	50%	1.4	
2021	45.7%	1.5	47.2%	1.5	1.4	0.6	-	52%	1.4	
2022	46.2%	1.5	49.0%	1.4	1.4	0.6	-	55%	1.3	
2023	46.6%	1.5	50.8%	1.4	1.4	0.6	-	58%	1.2	
2024	47.1%	1.5	52.4%	1.3	1.4	0.6	-	60%	1.1	
2025	47.6%	1.5	54.0%	1.3	1.4	0.6	-	63%	1.0	
2026	48.1%	1.4	55.6%	1.2	1.4	0.6	-	66%	0.9	
2027	48.6%	1.4	57.0%	1.2	1.4	0.6	-	70%	0.8	
2028	49.0%	1.4	58.4%	1.1	1.4	0.6	-	73%	0.7	
2029	49.5%	1.4	59.7%	1.1	1.4	0.5	-	76%	0.6	
2030	50.0%	1.4	60.9%	1.1	1.4	0.5	-	80%	0.5	
2031	50.0%	1.4	62.0%	1.0	1.4	0.5	-	84%	0.4	
2032	50.0%	1.4	63.1%	1.0	1.4	0.5	-	88%	0.3	
2033	50.0%	1.4	64.0%	1.0	1.4	0.5	-	92%	0.2	
2034	50.0%	1.3	64.9%	0.9	1.3	0.5	-	96%	0.1	
2035	50.0%	1.3	65.7%	0.9	1.3	0.5	-	100%	-	
TOTAL		22.9		19.0 [*]	22.2	8.9	-		11.9	
CO ₂ Reduction over (c)					3%	61%	100%		48%	
CO ₂ Reduction over (c) (MMT)					0.7	14.0	22.9		11.0	
<p>[*] For illustrative purposes only; SDG&E has not indicated it would exceed RPS mandates. Key: RPS—California Renewable Portfolio Standard MMT—Million Metric Tons CO₂—Carbon Dioxide CCA—Community Choice Aggregation RPC—Renewable Portfolio Content</p>										

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outputs. The tables of multipliers can be used to estimate the effects in changes in spending for various industries, household consumption, or labor income. Both positive and negative impacts can be measured. I/O modeling produces results in the following categories:

- **Direct Effects** – Increased purchases of inputs used to produce final goods and services purchased by residents. Direct effects are the input values in an I/O model, or first-round effects.
- **Indirect Effects** – Value of inputs used by firms affected by direct effects (inputs). Economic activity that supports direct effects.
- **Induced Effects** – Results of Direct and Indirect effects (calculated using multipliers). Represents economic activity from household spending.
- **Total Effects** – Sum of Direct, Indirect, and Induced effects.
- **Total Output** – Value of all goods and services produced by industries.
- **Value Added** – Total Output less value of inputs, or the Net Benefit/Impact to an economy.
- **Employment** – Number of additional/reduced full time employment resulting from direct effects.

Table 28 shows the effect that \$59.2 million in rate savings will have on the San Diego County regional economy. This rate savings represents the average annual minimum bill savings achievable by the CCA program once fully operational under the Base Case Scenario in year 2026. In total, approximately 544.7 jobs are expected to be created. Regional labor income impact of over \$18.9 million, a total value added impact of approximately \$30.8 million, and an output impact over \$48.8 million, are also projected.

Table 28: Projected Rate Savings Effects on Local Economy (2026 \$)

Impact Type	Jobs (Full Time Equivalents)	Labor Income	Total Value Added ⁱ	Output ⁱⁱ
Direct Effect	435.2	\$12,838,821	\$20,069,498	\$31,116,656
Indirect Effect	42.8	\$2,687,672	\$4,633,454	\$7,772,725
Induced Effect	66.6	\$3,379,934	\$6,047,777	\$9,932,081
Total Effect	544.7	\$18,906,427	\$30,750,730	\$48,821,462

ⁱ In the context of IMPLAN Group LLC's Input-Output Multiplier Model, value added is very similar to gross domestic product and includes four components: wages, business income, other income, and indirect business taxes. Value added, therefore, accounts for the value of work, land, and capital but excludes the costs of generating the additional value.

ⁱⁱ Output is an approximate measure of the money that the estimated rate decrease introduces to the local economy through spending on local goods, services, and wages. Output equals the sum of the value of intermediate goods and services, wages, business income, other income, and indirect business taxes.

Source: National Renewable Energy Laboratory Jobs and Economic Development Impact Model; IMPLAN Group LLC Multipliers; EnerNex; and Willdan, 2017.

These utility savings assume that households will spend some share of the increased disposable income on more local retail goods and services. This increased spending on goods and services will then lead to

Table 31: Economic Impacts of Investment of Surplus Funds

Resource Development Year 2022			
During Construction and Installation Period	Annual Jobs	Annual Earnings ⁱ (\$000)	Annual Output ⁱ (\$000)
Project Development and Onsite Labor Impacts			
Construction and Installation Labor	8.8	\$683.4	Not applicable
Construction and Installation Related Services	15.5	\$911.5	Not applicable
Subtotal	24.2	\$1,594.8	\$2,108.5
Module and Supply Chain Impacts			
Manufacturing	0.0	\$0.0	\$0.0
Trade (Wholesale and Retail)	2.5	\$163.0	\$460.1
Finance, Insurance and Real Estate	0.0	\$0.0	\$0.0
Professional Services	2.3	\$134.9	\$355.1
Other Services	5.4	\$599.5	\$1,434.9
Other Sectors	11.8	\$442.2	\$861.0
Subtotal	22.0	\$1,339.5	\$3,111.1
Induced Impacts	12.2	\$616.1	\$1,788.0
Total Impacts	58.4	\$3,550.5	\$7,007.6
During Operating Years	Annual Jobs	Annual Earnings ⁱ (\$000)	Annual Output ⁱ (\$000)
Onsite Labor Impacts			
PV Project Labor Only	0.5	\$2,286.1	\$2,286.1
Local Revenue and Supply Chain Impacts	5.0	\$290.6	\$849.0
Induced Impacts	5.4	\$271.1	\$786.8
Total Impacts	10.8	\$2,847.7	\$3,921.8
<p>ⁱ Earnings and Output values are thousands of dollars in year 2015 dollars. Construction and operating period jobs are full-time equivalents for one year (2,080 hours). Economic impacts "during operating years" represent impacts that occur from system/plant operations/expenditures. Totals may not add up due to independent rounding.</p> <p>Source: National Renewable Energy Laboratory Jobs and Economic Development Impact Model; IMPLAN Group LLC Multipliers; EnerNex; and Willdan, 2017</p>			

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from utility savings were identified. One-time construction from EE and renewable energy resources could generate approximately 58.4 jobs, \$3.6 M in labor income and \$7.0 M in regional output, followed by 10.8 jobs, \$2.9 M in labor income and \$3.9 M in annual economic output from operating expenditures. These initiatives are expected to generate job creation and local investment benefits while also achieving targeted sustainability goals.

Table 32: Summary of Projected CCA Program Economic Impacts

Impact Type ⁱ	Jobs	Labor Income (\$)	Total Output (\$)
Increased Disposable Income - Ongoing Operations			
Direct Effect	435.2	\$12,838,821	\$31,116,656
Indirect Effect	42.8	\$2,687,672	\$7,772,725
Induced Effect	66.6	\$3,379,934	\$9,932,081
Total Effect	544.7	\$18,906,427	\$48,821,462
Local Investment - During Construction and Installation Period			
Project Development and Onsite Labor Impacts	24.2	\$1,594,800	\$2,108,500
Module and Supply Chain Impacts	22.0	\$1,339,000	\$3,111,100
Induced Impacts	12.2	\$616,100	\$1,788,000
Total Impacts	58.4	\$3,549,500	\$7,007,600
Local Investment - Ongoing Operations			
Onsite Labor Impacts	0.5	\$2,286,100	\$2,286,100
Local Revenue and Supply Chain Impacts	5.0	\$290,600	\$849,000
Induced Impacts	5.4	\$271,100	\$786,800
Total Impacts	10.8	\$2,847,800	\$3,921,900
ⁱ Earnings and Output values are in year 2015 dollars. Construction and operating period jobs are full-time equivalent for one year (2,080 hours). Economic impacts "During operating years" represent impacts that occur from system/plant operations/expenditures. Source: National Renewable Energy Laboratory Jobs and Economic Development Impact Model; IMPLAN Group LLC Multipliers; EnerNex; and Willdan, 2017.			

OTHER PROGRAM OPPORTUNITIES

As part of the City's overall plan to achieve CAP goals, in addition to procuring renewable energy, a CCA could encourage other DSM activities through programs and rebates. Figure 46 depicts the hierarchy of DSM programs by level of formality or structure. The hierarchy ranges from voluntary conservation activities, such as turning off lights when leaving a room, to the apex of highly structured Demand